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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/610,269	07/06/2000	Dennis Bushmitch	MATI-193US	5547

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EXAMINER
SEFCHECK, GREGORY B

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/610,269	BUSHMITCH ET AL.	
	Examiner	Art Unit	
	Gregory B Sefcheck	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10-16* is/are allowed.

6)☒ Claim(s) *1-9 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 July 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng et al. (US005751708A).

In regards to Claim 1, Eng discloses a method of transmitting data packets from an end-user device or remote terminal to a common system controller/scheduler through the use of periodically allocated grants by the system controller.

By checking the end-user device's buffer for additional data (Col. 2, lines 1-8), Eng shows that the end-user device determines whether the bandwidth size of the data to be transmitted is greater than the size of the periodically allocated grant (Determine whether the data bandwidth size is greater than the allocated transmission grant).

If so, a request for a dynamically allocated grant is transmitted along with the first portion of the data (Col. 5, lines 15-24) in the periodically allocated grant (Transmit first portion of data along with a request).

The request for a dynamically allocated grant communicates the size of the data remaining in the buffer (Col. 7, lines 27-30; Request a dynamic grant equivalent to the size of the remaining data portion), so the transmission of that remaining portion of data

can be completed in response to the allocation request (Transmit the remaining data at the next grant).

Eng does not expressly state that the data being transmitted in the allocated grant is a single data packet, but rather a block of data, in general.

It would have been obvious to one skilled in the art at the time of the invention to adapt the method of Eng by applying the transmission described above to a block of data consisting of a single packet or multiple packets as a matter of design choice.

In regards to Claim 2, the method of Eng shows that it can be continually determined if the bandwidth of the remaining portion of the first data packet plus any subsequent data is greater than the next allocated grant by checking the end-device's buffer for additional data (Col. 6, lines 31-35; determine if the combined size of remaining data and new data is greater than the size of the next grant)

If so, a request for a further dynamically allocated grant is sent along with the next allocated grant, containing the remaining data portion of the first packet and a first portion of the subsequent data. (Col. 6, lines 31-35; Transmitting at least the remaining portion of data, requesting a further dynamically allocated grant along with the transmission and transmitting the remaining portion of the subsequent packet in response to the next available grant)

Eng does not explicitly state that at least the remaining portion of the first data packet is to be transmitted in response to the next available grant. Eng also does not

expressly disclose that the requested dynamically allocated grant is to be of a size equivalent to that of the remaining data portion and the subsequent data packet.

It is well known in the art that data transmissions are often of a time-sensitive nature. Therefore, latency through the network should be kept to a minimum for the best quality transmission possible. It is also well known in the art that maximizing high bandwidth utilization is preferable while maintaining this minimum transmission latency through the network.

It would have been obvious to one of ordinary skill in the art at the time of invention to amend the method of Eng to ensure that the remaining portion of any previously partially-transmitted packet(s) are transmitted in response to the next available grant, in order to maintain an acceptable transmission latency, while also requesting a grant size capable of transmitting the remaining portion as well as subsequent data packet(s), thereby maintaining a high bandwidth utilization of the transmission medium.

In regards to Claim 3, Eng shows that the data packets to be transmitted are stored in a buffer, with transmission bandwidth requirements being determined by comparing the contents of the buffer to a threshold value. An empty buffer (a threshold value of 0) is used as this threshold in Eng. (Col. 4, lines 56-60; Col. 6, lines 26-35; Bandwidth size of packets determined by storing in a buffer and comparing the buffer to a threshold)

In regards to Claim 4, Eng shows that the remaining portion is transmitted in response to a dynamically allocated grant corresponding to the request sent along with the first portion of data. (Col. 2, line 28)

In regards to Claim 5, Eng shows that the bandwidth size of the first portion of data is such that it is less than or equal to the bandwidth size of the periodically allocated grant. (Fig. 3-5)

In regards to Claim 8, note the method of Eng can be applied to a cable distribution system network for transmission of packets to and from end-user devices. (Col. 3, lines 22-25; network is data over cable system interface compliant)

In regards to Claim 9, Eng discloses that the piggybacked request is transmitted within the allocated grant. (Fig 3 and 6A; Col. 5, lines 15-24)

Eng does not expressly state that the request is to be contained with an extension of the packet header.

The advantages of keeping signaling information, such as the piggybacked request, separate from payload data within a data packet are well known in the art.

Therefore, it would have been an obvious matter of design choice to adapt the method of Eng by transmitting the request within an extension of the packet header within the allocated grant.

3. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng et al (US005751708A) in view of Lakshman (US006269078B1).

In regards to Claims 6 and 7, Eng discloses a method of transmitting data packets from an end-user device or remote terminal to a common system controller through the use of periodically allocated grants by the common system controller in order to maximize bandwidth utilization and minimize latency of transmission. Eng further discloses the end-user device determining whether the bandwidth size of the data to be transmitted is greater than the size of the periodically allocated grant, and if so, transmits the first portion of the data in the periodically allocated grant along with a request for a dynamically allocated grant, so that the remaining portion of the data transmission can be completed in response to a next available grant. (Fig. 1B and 5; Col. 5, lines 15-24)

Eng does not expressly state that the data being transmitted are compressed video data packets, such as those pursuant to the motion picture experts group standard (MPEG).

Lakshman et al. show a method comprising a remote terminal being granted transmission requests based on the bandwidth size of data packets of compressed video, such as MPEG video streams (referenced throughout Specification) from an end-user encoder or remote terminal to a common network or system controller.

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the method of Eng by applying the method to the transport of compressed video data, such as MPEG video, as taught by Lakshman et al, to satisfy

compressed video's need for low latency transmission while maintaining high bandwidth utilization.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification does not clearly describe how the measurement-based dynamic UGPRS unsolicited channel allocation is calculated. Referring to Fig. 9, step 8, it is not sufficiently described how the new UGS grant size is calculated using the increase and decrease constants obtained in steps 6 and 7.

Furthermore, the claim's reference to "at least two predetermined thresholds" is not consistent with Fig. 9, where only one threshold is shown. Additionally, the nature of the predetermined thresholds and what they represent are not described.

Allowable Subject Matter

7. Claims 10-16 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not teach or fairly suggest a method, as specified in independent Claim 10, of transmitting variable bit-rate data packets that exceed the bandwidth size of a periodic grant comprising:

- Decomposing a variable bit-rate packet into a constant bit-rate (CBR) portion and a variable bit-rate (VBR) portion.
- Transmitting the CBR portion along with a request for a dynamically allocated grant equal to the size of the VBR portion
- Transmitting the VBR portion in response to the next available grant

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US006075787A – Bobeck et al. disclose a method and apparatus for messaging, signaling, and establishing a data link utilizing multiple modes over a multiple access broadband communications network
- US006115390A – Chuah discloses a bandwidth reservation and collision resolution method for multiple access communication networks where remote hosts send reservation requests to a base station for randomly chosen minislots

- US006055242A – Doshi et al. disclose a method and apparatus enabling synchronous transfer mode, variable length and packet mode access for multiple services over a broadband communication network
- US006381228B1 – Prieto, Jr. et al. disclose a onboard control of demand assigned multiple access protocol for satellite ATM networks
- US006192026B1 – Pollack et al. disclose a medium access control protocol for OFDM wireless networks

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B Sefcheck whose telephone number is 703-305-0633. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

GBS
August 8, 2003

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
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